



# UNITED STATES PATENT AND TRADEMARK OFFICE

*Am*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/517,748

12/13/2004

Jun Ma

100647-9330

5924

31013 7590 01/15/2008  
KRAMER LEVIN NAFTALIS & FRANKEL LLP  
INTELLECTUAL PROPERTY DEPARTMENT  
1177 AVENUE OF THE AMERICAS  
NEW YORK, NY 10036

EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

01/15/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

klpatent@kramerlevin.com

|                              |                                     |                           |  |
|------------------------------|-------------------------------------|---------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/517,748       | Applicant(s)<br>MA ET AL. |  |
|                              | Examiner<br>Kallambella Vijayakumar | Art Unit<br>1793          |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23,26-28,30-78,81,82 and 84-111 is/are pending in the application.
- 4a) Of the above claim(s) 1-20,36-43,45-75 and 90-96, 98-111 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-23,26-28,30-35,44,76-78,81,82,84-89 and 97 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 1-23, 26-28, 30-78, 81-82, 84-111 are currently pending with the application. Claims 24-25, 29, 79-80 and 83 were cancelled.

Applicant's election without traverse of Group-II, Claims 21-23, 26-28, 30-35, 44, 76-78, 81-82, 84-89 and 97 in the reply filed on 10/24/2007 is acknowledged. Non-elected Claims are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

The examiner has considered the IDS filed 01/11/2007 which is in compliance with the provisions of 37 CFR 1.97.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 21-23, 26-28, 32-35, 44, 76-78, 81-82, 86-89 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al (US 7,118,693).

The prior art teaches the composition of a coating solution, a coated film and making of the coating solution, wherein the composition comprised of a substantially homogeneous dispersion of SWNT or MWNT with a diameter of less than 3.5 nm and an aspect ratio of 20-1000 in a polar solvent such as acetone, water, ethers and alcohols or their mixtures, and a binder such as acrylic, polyurethane, silicone and epoxy (Abstract, CI-8, Ln 63-67; CI-4, Ln 57-60; CI-5, Ln 3-5). The nanotubes were oxidized by treatment with oxidizing agents and the aggregates formed ropes that meet the limitation of substantially free of pyrolytically deposited carbon overcoat in the claim-21 (CI-5, 36-52). The composition meets the limitation of conductive ink. The SWNT and MWNT were dispersed in a solvent and mixed with an ultrasonic homogenizer <milling and dispersing>. The dispersed nanotubes were separated from the solvent by centrifuging. The supernatant solvent was decanted and the remaining nanotubes were combined with the resin forming the coating solution/dispersion and further casting a film over a substrate (CI-10, Ln 40-67).

The prior art fails to teach filtering the solution/dispersion per claim-21.

It would have been obvious to a person of ordinary skilled in the art to substitute a filtering means as functional equivalent of centrifuge with predictable results and reasonable expectation of success, because they attain the separation of solids and liquids. This further meets the limitation of claims 23 and 76.

With regard to order of performing the steps in claim-22, the prior art teaches all the elements of the process steps, and selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results; In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is prima facie obvious.). <MPEP 2144.04>. This further meets the limitation of claims 77 and 78.

With regard to claim 26, the prior art teaches acrylic resins

With regard to claims 27 and 81, the prior art teaches alcohols.

With regard to claims 28 and 82, the prior art teaches water.

With regard to claims 32-35 and 86-89, the prior art teaches oxidized MWNT and SWNT and ropes of SWNT.

With regard to claims 44 and 97, the prior art teaches a film similar to that produced by the instant claimed process and When the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process, the claim is not patentable. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) And *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP §2113.

2. Claims 30 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al (US 7,118,693) in view of Shibuta et al (US 5,908,585).

The disclosure by Glatkowski on the composition and method of making the coating solution as set forth in rejection-1 under 35 USC 103 (a) is herein incorporated.

The prior art fails to teach the instant claimed solvents per claims 30 and 84.

In the analogous art, Shibuta teaches coating solutions for forming conductive film comprising a dispersion of Graphitic fibrils/carbon microfibers with a OD of 3.5-70 nm and an aspect ratio of greater than 5 dispersed in a polar solvent such a cellosolve and ethoxy ethanol, and a binder such as acrylic resins, urethane and epoxy (Abstract; Cl-3, Ln 29-44; Cl-5, Ln 26-35; Cl-6, Ln 7-36).

It would have been obvious to a person of ordinary skilled in the art to substitute or include cellosolve and/or ethoxy ethanol of Shibuta as functional equivalent in the coating composition of Glatkowski with predictable results and reasonable expectation of success, because the teachings are in the analogous art and Glatkowski teaches the addition of ether and ester solvents in the composition.

3. Claims 31 and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al (US 7,118,693) in view of Shibuta et al (US 5,853,877).

The disclosure by Glatkowski on the composition and method of making the coating solution as set forth in rejection-1 under 35 USC 103 (a) is herein incorporated.

The prior art fails to teach the instant claimed fibrils per claims 31 and 85.

In the analogous art, Shibuta teaches coating solutions and film comprising a dispersion of oxidized Graphitic fibrils/carbon microfibers with a OD of 3.5-70 nm and an aspect ratio of greater than 5 dispersed in a polar solvent (Abstract).

It would have been obvious to a person of ordinary skilled in the art to substitute or include fibrils of Shibuta as functional equivalent in the coating composition of Glatkowski with predictable results and reasonable expectation of success, because the teachings are in the analogous art and Glatkowski teaches dispersion of CNT in polar solvents, and Similarly, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 6.30-4.00 Mon-Thu, 6.30-2.00 Alt Fri.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:  
10/517,748  
Art Unit: 1793

Page 6

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/  
January 7, 2008.

  
STANLEY S. SILVERMAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700